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THE AGRICULTURAL SITUATION FOR 1918

A SERIES OF STATEMENTS PREPARED UNDER THE
DIRECTION OF THE SECRETARY OF AGRICULTURE

PART IV H O N E Y MORE HONEY NEEDED



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FARMERS' BULLETINS RELATING TO HONEY.

[Available for free distribution.]

- 442. Treatment of Bee Diseases.
- 447. Bees.
- 503. Comb Honey.
- 653. Honey and Its Use in the Home.
- 695. Outdoor Wintering of Bees.

PRECEDING CIRCULARS OF THIS SERIES.

The Agricultural Situation for 1918:

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MORE HONEY NEEDED.

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A SUPPLEMENTAL SWEET.

IT IS IMPERATIVE that we increase not only the sugar crop in the United States,¹ but every possible supply of sweets, and honey is one of the supplemental sweets the supply of which can be enlarged without great effort. Not only should those who already keep bees enlarge the number of their colonies, but the industry should also be extended to localities where beekeeping has not been tried on a commercial scale.

The average annual honey crop of the United States is about 250,000,000 pounds and is sufficient to supply each man, woman and child with about 2½ pounds a year, which is equivalent to 3 per cent of the amount of sugar they consume in normal times. Thus there is ample room for expansion of both the production and consumption. The present use of honey in the home usually is as a substitute for jellies, jams, and sirup. It is little used in domestic cooking or baking, but this use should be increased. While honey within recent years has sold at prices sufficiently low to justify its use as a substitute for sugar, it is rarely used in commercial food manufacturing except in the making of certain cakes which must be kept moist for a considerable time. Usually, however, the supply of honey is so inadequate that most of the crop can be used as a spread for bread. With the use limited as it is, many people in the United States rarely eat honey, but it is evident that there might be developed a ready sale for honey as a supplement to sugar, if production were increased many times.

The amount of nectar secreted by the untold myriads of flowers, from which bees make honey, is large beyond our comprehension. The total amount of sugar in the nectar greatly exceeds the amount of all sugar and other sweets consumed by the American people. Unfortunately, from the standpoint of man, this sugar cannot all be collected and utilized as human food. Even the honeybee, which is so often used as an example of industry, consumes for its own food the larger part of all that it collects.

Beekeeping is, therefore, the means of saving for human use a small fraction of the vast store of sugar secreted. But the raw material is free and its conservation costs only a small expenditure for equip-

¹ More Beet and Cane Sugar Should be Produced, Circular No. 87, Office of the Secretary, United States Department of Agriculture.

ment and relatively little in labor, and the honey crop could be increased 10 or even 20 times without increasing the cost of production per pound to an appreciable degree.

Beekeeping may be practiced in almost all habitable parts of the United States, but is not equally profitable everywhere. Its possibilities as a business depend on the abundance of nectar-secreting plants. Not all flowers secrete nectar, and even the best of nectar-secreting plants vary considerably in value within their range. For example, alfalfa, which is the source of an abundance of beautiful white honey in the high irrigated region of Colorado, Utah, and Idaho, is worthless as a nectar source in the East, and in the lower regions of California, New Mexico, and Arizona it produces an amber honey of somewhat different flavor. White clover, from which the choicest honey is produced in northeastern United States, is of less value in the South and of little, if any, value west of the Cascade Mountains, from the standpoint of honey production.

OPPORTUNITY FOR EXPANSION OF BEEKEEPING.

In choosing a place for commercial beekeeping, attention should be paid to the regions best adapted to this industry, and it should also be remembered that not all localities within a main region are equally valuable. The chief honey regions of the United States are (1) the white clover region of the Northeast; (2) the southeastern region, west to eastern Texas, with a wide variety of nectar sources; (3) the alfalfa region of the West; (4) the mountain sage region of southern California, and (5) the semi-arid region of Texas and adjacent States. In all of these regions commercial beekeeping is practiced extensively and in all of them, too, there is room for a great expansion of the industry as a commercial enterprise.

In addition to these larger regions, many more restricted areas offer special inducements to the beekeeper. It is possible to name here only a few of these, simply to indicate the type of localities in which beekeeping is profitable. Typical plants of restricted distribution and of value for nectar are buckwheat, wild raspberry and willowherb in the burned and cut over forests of the North, Spanish needle in swampy lands, heartsease or smartweed in cornfields of the Middle West, tupelo in southern swamps, and linden or basswood.

The valuable honey sources of the United States are so many that a list would be of considerable size, and if all the plants from which honeybees gather nectar were included, the list would be formidable. From the ones here mentioned it is evident now even more than in normal times that a beekeeper must examine his locality carefully to see what honey plants are at hand before embarking in commercial beekeeping. There is no difficulty in finding suitable locations, how-

ever, for thousands of acres of excellent honey plants are inadequately supplied with bees.

While beekeeping is usually considered only as the industry of honey production, it is important to remember that the honeybee has an important place in American agriculture as an agent for cross-fertilizing flowers. The value of the honeybee in this regard varies in different places and with different seasons, but it is conservative to state that the bee is of more value in cross-fertilizing than in honey production. Many fruit blossoms require cross-fertilization before they will set fruit, and the same thing is true of other plants, such as the clovers and buckwheat. While many wild species of insects serve this purpose, the honeybee is the only one which can be introduced economically to an orchard or farm, and, therefore, may serve as an insurance to cross-fertilization if the weather permits their flight during the blooming period.

Even where colonies of bees are sufficiently numerous and where nectar is freely secreted, beekeeping is not always considered profitable. This results from the nature of the industry. A colony of bees does not always gather sufficient honey for its own use and also enough so that the beekeeper can take honey for himself. It is only when bees are properly handled that they yield to the beekeeper the fullest return and, to an unusual degree, beekeeping is profitable to just the extent to which the beekeeper applies intelligent care.

FACTORS IN SUCCESSFUL BEEKEEPING.

Success in beekeeping depends on the beekeeper's skill in two lines of effort. First, he must see to it that every colony is strong in numbers at the beginning of the period when nectar is secreted. This is often not accomplished, for if the colony is weakened by poor care in winter the secretion of nectar may begin so early in the season that the bees have not time, without aid, to gain sufficiently in strength. An example is found in the white clover region, where nectar secretion usually begins about June 1, and most beekeepers lose much of the white clover nectar from bad management. In the alfalfa region many colonies fail to get nectar from the first crop from the same cause, even though this often comes in July. It is evident, therefore, that a failure to provide proper care in winter and spring may result in almost total failure. This one factor is responsible for heavy losses which should be guarded against, especially at this time.

The requirements for obtaining strong colonies in time for the nectar flow are here outlined. This work begins the previous summer, when the beekeeper must see that every colony is sufficiently strong in bees to winter successfully, and this can be done only by leaving plenty of stores and space for breeding in the fall. Besides plenty of honey stores of good quality, bees require abundant protection from cold and

wind. Whenever the temperature of the air surrounding the bees in winter falls below 57 degrees F. the bees generate heat by muscular activity. This causes a greater consumption of food, a corresponding increase in the amount of water generated by the bees and the accumulation of an indigestible residue in the intestines. It also greatly reduces the vitality of the individual bee. By protecting the hive abundantly the heat of the colony is conserved and heat generation is reduced to a minimum. A failure to take proper care of bees in winter is the source of the greatest loss now experienced by beekeepers, and this applies to almost all parts of the United States; yet it is a simple matter to protect the bees in the hives—one which will put more dollars in the farmer's pockets and more bees in his hives.

In the spring bees require not only abundant stores and protection, as in the winter, but they also require plenty of room for rearing the brood. If the hive is insulated to excess this room may be given the previous fall, so that if bees are properly packed for winter there is nothing further the beekeeper can do to insure a strong colony early in the year. It would seem that with such simple requirements it would be impossible for any beekeeper to fail in having strong colonies early in the season. The truth is, however, that colonies of proper strength are rarely seen early in the spring. From coast to coast and from Canada to the Gulf even commercial beekeepers are utterly failing in this simple essential. The failure is directly due to a lack of knowledge of the requirements of bees or to a belief that, because bees do not all die in unprotected hives, special care in winter is not needed. Here, then, is a leak in the beekeeping industry which should be stopped. The number of bees which goes into the hive in the fall is important, but if any are found dead in the spring, even the industry of the bee cannot overtake the handicap of reduced numbers and strength.

A second, and in some regions an equally important, consideration is keeping the colonies from swarming. Where a colony divides itself into two parts by swarming, neither part is able to gather as much surplus honey for the beekeeper as the original colony might have done. The old-time beekeeper counted his success by the number of swarms which issued, but the modern beekeeper realizes that unrestricted swarming is one of the greatest sources of loss. To prevent swarming entirely, or even to handle swarms so as to overcome this source of loss, is the most difficult task confronting the beekeeper in some regions, while in others the problem is almost absent. No infallible method of swarm prevention has been found, owing probably to the fact that the cause of swarming is not yet known in spite of the strenuous effort to solve this mystery of the hive. However, practical methods of prevention and control have been evolved so that in profiting by the work of others a beekeeper can largely overcome this diffi-

culty. Unless the beekeeper realizes the necessity of having colonies strong in time for the nectar and of keeping up this strength by every means at his command, his beekeeping endeavors will fail to yield the greatest profit—a condition which is particularly undesirable at this time.

While these essentials are simple and easily understood, each locality presents to the beekeeper certain peculiarities, making it necessary that close attention be given to nectar sources and especially making a study of bee behavior a prime essential. Too many beekeepers work by rule of thumb, but the successful beekeeper is a student of bees, able to adapt his practice to the changing seasons.

A difficulty in beekeeping which has prevented its adequate expansion in many localities is the presence of a brood disease. There are two infectious diseases of the brood, American foulbrood and European foulbrood, which annually cause considerable loss by the death of colonies. An effort has been made to overcome these through apiary inspection which has been instituted in various States, and this has proved of much value. The most serious aspect of the disease situation is not so much the actual losses incurred but rather the fact that the less well-informed beekeepers become discouraged and lose faith in beekeeping before they learn to combat these diseases. The informed commercial beekeeper can continue to produce crops of honey with profit, but the diseases make the work of new beekeepers more exacting and they are especially discouraging to the beginner in his efforts to become a commercial producer.

Beekeeping is applied bee behavior, and to a degree rarely seen in other industries success depends on a study of natural activities. Bees are wild, and man can only handle them in ways to permit their natural activities to yield him the best return.

These essentials to the greatest success are discussed in numerous text books and bulletins published by the agricultural colleges and the United States Department of Agriculture, but differing as they do from directions for other lines of agriculture this method of presentation has not proved fully adequate. While thousands of beekeepers in all parts of the country are making a good profit from their bees, many of those who are considered successful are not getting the greatest possible return, and those less well informed often regard beekeeping as unprofitable.

TO EXPAND THE INDUSTRY.

To build up beekeeping to take its proper place in American agriculture, education of beekeepers in the essentials of beekeeping is of first importance. Since printed instructions are not fully satisfactory, extension work is needed. The peculiar character of the information

needed by the beekeeper makes personal instructions even more necessary than in other branches of agriculture.

Several States have inaugurated apiary inspection. Wherever this has proven beneficial the work has been conducted as an educational campaign rather than with a show of the police authority granted by the laws. Apiary inspection, however, was devised as a plan to save the beekeeping industry rather than to increase it. It must be remembered that when these laws were passed it would have been difficult in many cases to obtain an appropriation for educational work in beekeeping. Inspection has served a most useful purpose, but with the development of extension work in the various lines of agriculture, the time will probably soon come when inspection should give way to extension work in beekeeping.

From time to time courses in beekeeping have been introduced in various agricultural colleges, but many of these were short-lived. During the last seven years this work has come to be recognized at its true value, and permanent courses are rapidly being introduced. A commendable effort has been made by the teachers of beekeeping in the colleges to standardize the courses, and great good may be expected of the college work. An effort is being made to make these courses practical, and in so far as this can be done they should assist students to become high grade commercial beekeepers. In connection with this work some extension work has been undertaken. Extension work in beekeeping is now being conducted in the 15 southern States and in various parts of the North and West by the Bureau of Entomology, in cooperation with the extension service of the various States, with satisfying results. In addition; it is planned to appoint several commercial beekeepers who are to devote their winters to assisting in each of these regions.

It seems best to limit the emergency extension activities to those regions where a considerable increase in the honey crop may reasonably be expected in the immediate future. While the constructive work in regions where beekeeping is undeveloped is still valuable, it becomes more necessary to work for immediate returns. With this in view, certain States in the North and West have been placed in seven districts with at least one extension specialist in each district. Not all parts of these States are equally promising, and consequently within each district the greatest effort will be made in the more promising regions. So far as possible the districts are formed with due regard to a similarity of the honey crop, thus giving better opportunity for each specialist to put forth his best effort for increasing the honey supply.

It is hoped and believed that the active effort of these practical specialists will stimulate commercial beekeepers to their greatest efforts and will result in a permanent improvement of the beekeeping industry by emphasizing the essentials of beekeeping. The extension work will come under circumstances which impel every patriotic beekeeper to desire all available information and assistance; and it is expected that the beekeeping industry will not only do its share in the war but will benefit permanently by its patriotic effort.



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